UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: June 13, 2001

SUBJECT: Review of Data
Received for Review on June 8, 2001

FROM: Stephen L. Ostrodka, Chief (SMF-4J)
Superfund Field Services Section

TO: Data User: IEPA

The data in this case has not been validated.
We have compiled the CADRE files into a narrative format for the following case:

SITE NAME: Wisconsin Steel

CASE NUMBER: 29334 SDG NUMBER: ME0036

Number and Type of Samples: 4 soils

Sample Numbers: ME0036-39

Laboratory: Compuchem Hrs. for Review: 1

Following are our findings:

CC: Cecilia Moore
Region 5 TPO
Mail Code: SM-5J

Case Number : 29334
Site Name: Wisconsin Steel

SDG Number: ME0036
Laboratory: Compuchem

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

NUMBER (##) MATRIX samples numbered ##, were collected on DATE. The lab received the samples on DATE in good condition. All samples were analyze for metals and cyanide. All samples were analyzed using CLP SOW ILM04.1 analysis procedures.

Mercury analysis was performed using a Cold Vapor AA Technique. Cyanide analysis was performed using the MIDI Distillation procedure. The remaining inorganic analyses were performed using an Inductively Coupled Plasma-Atomic Emission Spectrometric procedure.

Assembled By: ESAT
Date: June 13, 2001

Case Number : 29334
Site Name: Wisconsin Steel

SDG Number: ME0036
Laboratory: Compuchem

1. HOLDING TIME:

Holding Time Report

SDG NO: ME0036

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	0	2.0	0.0
Mercury	28	0	2.0	0.0
Cyanide	14	0	12.0	0.0

DC-274: The holding time criteria exceeded 28 days criteria for mercury. Results greater than the IDL are estimated "J", the mercury results below the IDL are unusable "R".

ME0036, ME0036D, ME0036S, ME0037, ME0038, ME0039

DC-280: The following inorganic soil samples were reviewed for holding time violations using criteria developed for water samples.

ME0036, ME0036D, ME0036S, ME0037, ME0038, ME0039

2. CALIBRATIONS:

Calibration Report

SDG NO: ME0036

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

Assembled By: ESAT
Date: June 13, 2001

No problems found for this qualification.

CRDL Standards Report

SDG NO: ME0036

DC-373: The following inorganic samples are associated with a CRDL standard with low percent recovery.

Lead
ME0036, ME0037, ME0038, ME0039, PBS01

Thallium
ME0036, ME0037, ME0038, ME0039, PBS01

Zinc
ME0036, ME0037, ME0038, ME0039, PBS01

3. **BLANKS:**

Laboratory Blanks Report

SDG NO: ME0036

LABORATORY BLANKS CRITERIA

DC-283: The following inorganic samples are associated with a blank analyte with negative concentration whose absolute value is greater than the instrument detection limit (IDL). Professional judgement should be used to qualify the data.

ME0036
Arsenic, Cadmium, Calcium, Thallium
Zinc

ME0036D
Arsenic, Cadmium, Calcium, Thallium
Zinc

ME0036S
Arsenic, Cadmium, Thallium, Zinc

ME0037
Arsenic, Cadmium, Calcium, Thallium
Zinc

ME0038
Arsenic, Cadmium, Calcium, Thallium
Zinc

ME0039
Arsenic, Cadmium, Calcium, Thallium
Zinc

Assembled By: ESAT
Date: June 13, 2001

DC-284: The following inorganic samples are associated with a blank concentration which is greater than the instrument detection limit (IDL). The sample concentration is also greater than the IDL and less than five times the blank concentration. Hits are qualified "J"; non-detects are not flagged.

Sodium
ME0036, ME0036D, ME0037, ME0038, ME0039

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE AND LAB CONTROL SAMPLE:

Matrix Spike Report

SDG NO: ME0036

MATRIX SPIKE CRITERIA

Inorganic

Percent Recovery Limits	
Upper	125.0
Lower	75.0
Extreme lower	30.0

DC-268: The following inorganic samples are associated with a matrix spike recovery which is low (30-74 %) indicating that sample results may be biased low.
Hits are qualified "J" and non-detects are qualified "UJ".

Antimony
ME0036, ME0036A, ME0036D, ME0037, ME0038, ME0039

Selenium
ME0036, ME0036A, ME0036D, ME0037, ME0038, ME0039

LCS Report

SDG NO: ME0036

No problems found for this qualification.

5. LABORATORY AND FIELD DUPLICATE

Duplicates Report

SDG NO: ME0036

Assembled By: ESAT
Date: June 13, 2001

Case Number : 29334
Site Name: Wisconsin Steel

SDG Number: ME0036
Laboratory: Compuchem

DC-256: The following inorganic samples are associated with duplicate results which did not meet relative percent difference (RPD) criteria.
Hits are qualified "J" and non-detects are qualified "UJ".

Chromium
ME0036, ME0036S, ME0037, ME0038, ME0039

Manganese
ME0036, ME0036S, ME0037, ME0038, ME0039

6. ICP ANALYSIS

ICS Report

SDG NO: ME0036

DC-307: The following inorganic samples have no associated ICS analyses. Manual review of the data is required.

ME0036
Aluminum, Antimony, Arsenic, Barium
Beryllium, Cadmium, Calcium, Chromium
Cobalt, Copper, Iron, Lead
Magnesium, Manganese, Nickel, Selenium
Silver, Thallium, Vanadium, Zinc

ME0037
Aluminum, Antimony, Arsenic, Barium
Beryllium, Cadmium, Calcium, Chromium
Cobalt, Copper, Iron, Lead
Magnesium, Manganese, Nickel, Selenium
Silver, Thallium, Vanadium, Zinc

ME0038
Aluminum, Antimony, Arsenic, Barium
Beryllium, Cadmium, Calcium, Chromium
Cobalt, Copper, Iron, Lead
Magnesium, Manganese, Nickel, Selenium
Silver, Thallium, Vanadium, Zinc

ME0039
Aluminum, Antimony, Arsenic, Barium
Beryllium, Cadmium, Calcium, Chromium
Cobalt, Copper, Iron, Lead
Magnesium, Manganese, Nickel, Selenium
Silver, Thallium, Vanadium, Zinc

Serial Dilution Report

SDG NO: ME0036

Assembled By: ESAT
Date: June 13, 2001

Case Number : 29334
Site Name: Wisconsin Steel
SDG Number: ME0036
Laboratory: Compuchem

DC-294: The analyte concentration is high (>50 X the IDL) and serial dilution percent difference is not in criteria (>10%). Hits are qualified "J" and non-detects are qualified "UJ".

Potassium
ME0036, ME0036D, ME0037, ME0038, ME0039

7. GFAA ANALYSIS

Furnace AA QC Report

SDG NO: ME0036

No problems found for this qualification.

8. SAMPLE RESULTS

All data, except those qualified above, are acceptable.

Sample Result Verification Report

SDG NO: ME0036

No problems found for this qualification.

Assembled By: ESAT
Date: June 13, 2001

CADRE Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The data are unusable. (The compound may or may not be present)

Analytical Results (Qualified Data)

Case # 29334
Site : WISCONSIN STEEL
Lab : LIBRTY
Reviewer :
Date

SDG : ME0036

Number of Soil Samples : 4
Number of Water Samples : 0

Sample Number :	ME0036		ME0037		ME0038		ME0039		ME0036D	
Sampling Location :	X231		X232		X233		X234		X231	
Matrix	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001	
Time Sampled :	11:05		11:30		12:25		12:35		11:05	
%Solids :	59.0		50.6		64.6		65.5		59.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	16600		7780		7200		7400		16600	
ANTIMONY	0.85	J	0.95	J	0.58	J	1.8	J	3.2	J
ARSENIC	12.2		13.4		14.8		78.7		16.6	
BARIUM	190		66.0		61.7		255		216	
BERYLLIUM	2.6		0.66		0.81		0.51		2.5	
CADMIUM	2.3		2.0		2.1		2.1		2.3	
CALCIUM	60700		53900		52500		52900		56800	
CHROMIUM	24.9	J	39.1	J	36.5	J	19.7	J	49.8	
COBALT	3.3		8.1		8.2		8.8		3.4	
COPPER	40.8		53.0		67.5		92.3		48.3	
IRON	73600		60300		65600		31700		79700	
LEAD	110		94.0		111		184		150	
MAGNESIUM	14200		22000		22200		23200		12600	
MANGANESE	3040	J	1250	J	1290	J	587	J	4470	
MERCURY	0.14	J	0.090	R	0.12	J	1.2	J	0.13	J
NICKEL	17.9		28.2		27.4		24.1		18.5	
POTASSIUM	1280	J	1650	J	1390	J	1800	J	1340	J
SELENIUM	2.8	J	1.2	J	1.1	J	1.4	J	3.3	J
SILVER	0.24	U	0.27	U	0.21	U	1.3		0.24	U
SODIUM	422	J	522	J	254	J	253	J	402	J
THALLIUM	10.1		11.1		10.2		5.7		11.7	
VANADIUM	21.7		28.2		27.3		19.8		29.8	
ZINC	280		264		316		413		274	
CYANIDE										

Analytical Results (Qualified Data)

Case #: 29334
SDG : ME0036
Site
WISCONSIN STEEL
Lat.
Reviewer
Date

Sample Number	ME0036S									
Sampling Location :	X231									
Matrix :	Soil									
Units :	mg/Kg									
Date Sampled :	04/04/2001									
Time Sampled :	11:05									
%Solids :	59.0									
Dilution Factor	1.0									
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM										
ANTIMONY	86.7									
ARSENIC	23.5									
BARIUM	832									
BERYLLIUM	17.0									
CADMIUM	17.1									
CALCIUM										
CHROMIUM	84.2	J								
COBALT	155									
COPPER	125									
IRON										
LEAD	111									
MAGNESIUM										
MANGANESE	3390	J								
MERCURY	1.0	J								
NICKEL	168									
POTASSIUM										
SELENIUM	5.3									
SILVER	14.2									
SODIUM										
THALLIUM	23.9									
VANADIUM	176									
ZINC	412									
CYANIDE										

Inorganic Traffic Report

DAS No: ME0001
SDG No: ME0021

L

8:50

Date Shipped:	4/4/01
Carrier Name:	FedEx
Airbill:	3497986973
Shipped to:	Liberty Analytical 501 Madison Avenue Cary NC 27513 (919) 379-4080

Date Received/Received by: 4/5/01 M. Stover
Lab Contract No: 68W00082 Unit Price: 77.25

Transfer To:

Date Received/Received By:

Lab Contract No: Price:

Sampler (Signature): Ted Prescott

Relinquished By:	Date / Time:	Received By:
Ted Prescott	04/04/2001 1530	
Relinquished By:	Date / Time:	Received By:
Relinquished By:	Date / Time: 4/5/01 8:50	Received By: Melissa Stover

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME0016	Sediment/ Ted Prescott	L/G	TM (21)	5-43730 (1)	X228	4/2/01	E0016	Good
ME0017	Sediment/ Ted Prescott	L/G	TM (21)	5-43732 (1)	X201	4/3/01 14:30	E0017	
ME0018	Sediment/ Ted Prescott	L/G	TM (21)	5-43734 (1)	X202	4/3/01 14:45	E0018	
ME0019	Sediment/ Ted Prescott	L/G	TM (21)	5-43736 (1)	X203	4/3/01 15:00	E0019	
ME0020	Sediment/ Ted Prescott	L/G	TM (21)	5-43738 (1)	X204	4/3/01 15:15	E0020	SDG Final Samp
ME0021	Sediment/ Ted Prescott	L/G	TM (21)	5-43740 (1)	X205	4/3/01 15:30	E0021	
ME0022	Sediment/ Ted Prescott	L/G	TM (21)	5-43742 (1)	X206	4/3/01 15:40	E0022	
ME0023	Sediment/ Ted Prescott	L/G	TM (21)	5-43744 (1)	X207	4/4/01 17:05	E0023	
ME0024	Sediment/ Ted Prescott	L/G	TM (21)	5-43746 (1)	X208	4/3/01 17:15	E0024	
ME0025	Sediment/ Ted Prescott	L/G	TM (21)	5-43748 (1)	X209	4/4/01 17:35	E0025	
ME0026	Sediment/ Ted Prescott	L/G	TM (21)	5-43750 (1)	X210	4/4/01 17:45	E0026	
ME0027	Sediment/ Ted Prescott	L/G	TM (21)	5-43752 (1)	X211	4/4/01 18:15	E0027	
ME0028	Sediment/ Ted Prescott	L/G	TM (21)	5-43754 (1)	X212	4/4/01 18:20	E0028	
ME0029	Sediment/ Ted Prescott	L/G	TM (21)	5-43756 (1)	X213	4/4/01 9:10	E0029	
ME0030	Sediment/ Ted Prescott	L/G	TM (21)	5-43758 (1)	X240	4/4/01 9:10	E0030	

COPY
ORIGINAL DOCUMENTS INCLUDED IN CSF: ME00
SIGNATURE M. Stover DATE 4/5/01

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt: 5°C	Chain of Custody Seal Number: 20045-46
Analysis Key: TM = CLP TAL Total Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designat: Composite = C, Grab = G		Custody Seal Intact: Y / Shipment Iced: Y

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Contract Laboratory Analytical Services Support, 2000 Edmund Halley Dr., Reston, VA. 20191-3436 Phone 703/264-9348 Fax 703/264-9222

TR Number: 5-285846426-040401-0003

Inorganic Traffic Report

8:50

Case No: 29118
DAS No:
SDG No: ME0021

Date Shipped: 4/4/01 Carrier Name: FedEx Airbill: 3497986973 Shipped to: Liberty Analytical 501 Madison Avenue Cary NC 27513 (919) 379-4080	Date Received/Received by: 4/5/01 M. Stec Lab Contract No: 68W00082 Unit Price: 77.25 Transfer To: Date Received/Received By: Lab Contract No: Price:	Sampler (Signature): Ted Prescott	
		Relinquished By: Ted Prescott	Date / Time: 04/04/2001 1530 — Received By:
		Relinquished By:	Date / Time: — Received By:
		Relinquished By:	Date / Time: 4/5/01 8:50 — Received By: M. Stec

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME0031	Sediment/ Ted Prescott	L/G	TM (21)	5-43760 (1)	X214	4/4/01 9:30	E0031	Good
ME0032	Sediment/ Ted Prescott	L/G	TM (21)	5-43762 (1)	X215	4/4/01 9:45	E0032	
ME0033	Sediment/ Ted Prescott	L/G	TM (21)	5-43764 (1)	X216	4/4/01 10:05	E0033	
ME0034	Soil/Sediment/ Ted Prescott	L/G	TM (21)	5-43766 (1)	X229	4/4/01 10:20	E0034	
ME0035	Soil/Sediment/ Ted Prescott	L/G	TM (21)	5-43768 (1)	X230	4/4/01 10:30	E0035	
ME0036	Soil/Sediment/ Ted Prescott	L/G	TM (21)	5-43770 (1)	X231	4/4/01 11:05	E0036	
ME0037	Soil/Sediment/ Ted Prescott	L/G	TM (21)	5-43772 (1)	X232	4/4/01 11:30	E0037	
ME0038	Soil/Sediment/ Ted Prescott	L/G	TM (21)	5-43774 (1)	X233	4/4/01 12:25	E0038	
ME0039	Soil/Sediment/ Ted Prescott	L/G	TM (21)	5-43776 (1)	X234	4/4/01 12:35	E0039	

SDG Final Sam

COPY

ORIGINAL DOCUMENTS INCLUDED IN CSF- ME0001

SIGNATURE M Stec DATE 4/5/01

Shipment for Case Complete?	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Y			5°C	20045-46
Analysis Key: TM = CLP TAL Total Metals	Concentration: L = Low, M = Low/Medium, H = High	Type/Designat: Composite = C, Grab = G	Custody Seal Intact: Y	Shipment Iced: X

PR provides preliminary results. Requests for preliminary result will increase analytical costs.

Send Copy to: Contract Laboratory Analytical Services Support, 2000 Edmund Halley Dr., Reston, VA. 20191-3436 Phone 703/264-9348 Fax 703/264-9222

TR Number: 5-285846426-040401-0003

CompuChem
a Division of Liberty Analytical Corp.
501 Madison Avenue Cary, NC 27513

SDG NARRATIVE
CASE # 29334 SDG # ME0036
CONTRACT # 68W00082

The indicated Sample Delivery Group (SDG) consisting of four (4) soil samples was re-received into the laboratory information management system (LIMS) on May 25, 2001 from samples originally received April 5, 2001; intact and in good condition with Chains of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. Sample ID's reported in this data package are noted by the receiving department on the COC if they differ from those listed by the samplers on the COC.

The following samples were submitted for re-analysis. Please note that mercury is outside holding time from the date of original receipt.

The samples were analyzed, in accordance with EPA - CLP Statement of Work (SOW) document ILM04.1 for CLP TAL total metals.

The correlation coefficient for the mercury analytical run is confirmed to be $\geq$ 0.9950.

Per Region 5, the laboratory is permitted to pick QC for ME0036.

EQUATIONS FOR SOLID SAMPLE CALCULATIONS:

Client sample ME0036 is used for illustration.
Any sample result that is $\leq$ the instrument detection limit (IDL) will be entered at the IDL for that analyte.
ICP Equation:
Equation for obtaining metals sample results in mg/Kg as presented on FORM I data sheets from ICP instrument acquired results in ug/L (ppb).

$$\text{Concentration (\% solids) (mg/Kg)} = \frac{C \times D \times V}{W \times S}$$

Where
C = concentration (ug/L)
D = dilution factor
V = final volume in liters after sample preparation
W = weight in grams of wet sample
S = % solids/100

Example: aluminum result ug/L to mg/Kg.

$$\frac{49044.84 \text{ ug/L (C)} \times 1 \text{ (D)} \times 0.2 \text{ L (V)}}{1.0 \text{ g (W)} \times 0.590 \text{ (S)}} = 16625.369 \text{ mg/Kg reported as } 16600 \text{ mg/Kg}$$

Mercury Equation:
Equation for obtaining mercury sample results in mg/Kg as presented on FORM I data sheets from instrument acquired results in ug/L (ppb).

$$\frac{A \times D \times F}{B \times E}$$

Where
A = ug/L Hg
B = wet weight of sample
D = dilution factor to bring sample into analysis range
E = % solids/100
F = final volume in liters (0.1 L)

Example: mercury result ug/L to mg/Kg

$$\frac{0.1676 \text{ ug/L (A)} \times 1 \text{ (D)} \times 0.1 \text{ (F)}}{0.2 \text{ g (B)} \times 0.590 \text{ (E)}} = 0.1420 \text{ mg/Kg reported as } 0.14 \text{ mg/Kg}$$

SAMPLE IDs:

The following customer IDs are associated with this SDG:

ME0036 ME0037 ME0038 ME0039

INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within EPA CLP allowable limits.

SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSS & PBS) were found to be within acceptable ranges and all field samples were prepared and analyzed within the contract specified holding times for ICP metals. Mercury was outside holding time.

MATRIX RELATED QUALITY CONTROL:

The sample matrix spike, CCN = WG10512-1 (ME0036S) was found to be outside CLP control limits for antimony and selenium. The reported concentrations for these analytes are flagged with an "N" on all associated Form 1 and on Form 5a.

An "N" indicates a matrix-related interference in the sample preparation procedure &/or analysis for the flagged analyte. This is normally the consequence of a relatively high anionic content in the sample or (for some sediments) an inconsistent sample matrix relative to that analyte.

CLP control limits for matrix spike recoveries are set at 75% to 125% of the analyte quantity added unless original sample concentrations exceed the true values of these "spikes" by a factor of four or more. In this case, affected analytes are not flagged even if recoveries are outside percentage recovery control limits.

Post-digestion spikes are mandatory for analytes demonstrating unsatisfactory matrix spike recoveries during ICP analysis (excluding silver). The results of such spikes are presented on Form 5b.

Unsatisfactory recovery of post-digestion spikes of this type do not have bearing upon the aforementioned "N" flags, but may indicate interference during analysis &/or a solution matrix which is hostile to the analyte in question.

Satisfactory recovery of an analyte in a post-digestion spike of this type implies interference by the required preparation procedure or in the sample matrix itself. Lack of uniformity for an analyte in sediments will also result in satisfactory recovery of post-digestion spikes after failure in the related matrix spike.

The sample matrix duplicate, CCN = WG10512-2 (ME0036D) was outside CLP control limits for arsenic, chromium, lead, and manganese. The reported concentrations for these analytes are flagged with a "*" on all associated Form 1 and on Form 6.

A "*" indicates a non-homogeneous sample matrix in regard to the flagged analyte. This is normally the consequence of a relatively coarse texture or of a mixed-matrix in sediment samples.

CLP control limits for duplicate determinations are +/- 20% Relative Percent Difference (RPD) for concentrations greater than or equal to five times the CRDL in both the original and duplicate samples, and +/- the CRDL for concentrations less than five times the CRDL. The RPD is not calculated if both the original and duplicate values fall below the IDL.

A five-fold serial dilution of sample, CCN = ME0036-1 (ME0036L) was performed in accordance with CLP requirements for ICP analysis.

The adjusted sample concentrations were outside CLP control limits for potassium, which is flagged with an "E" on all associated Form 1, the Cover Page and Form 9.

An "E" indicates that a chemical or physical interference effect was encountered during the analysis of the flagged analyte. As a result of this interference, all values for the analyte in the same matrix must be considered to be estimated quantities.

CLP control limits for serial dilution are defined as a deviation less than or equal to 10% in the dilution-adjusted concentrations from the original values for all analyte concentrations with values greater than fifty (50) times their respective Instrument Detection Limit (IDL) in the original sample.

The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Thomas R. Cole
Data Reviewer II
June 6, 2001

CompuChem
a Division of Liberty Analytical Corp.
501 Madison Avenue Cary, NC 27513

DATA REPORTING QUALIFIERS FOR INORGANICS

On Form I, under the column labeled "C" for concentration qualifier and "Q" for qualifier, each result is flagged with the specific data reporting qualifiers listed below, as appropriate. Up to five qualifiers may be reported on Form I for each analyte.

The C (concentration) qualifiers used are:

U: This flag indicates the analyte was analyzed for but not detected. This reported value was obtained from a reading that was less than the Instrument Detection Limit (IDL). The IDL will be adjusted to reflect any dilution and, for soils, the percent moisture.

B: This flag indicates the analyte was analyzed for and the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL).

The Q qualifiers used are:

E: This flag indicates an estimated value. This flag is used:

1. When the serial dilution (a five fold dilution for CLP and a five fold dilution for SW-846 method 6010B) results are not within 10%. The analyte concentration must be sufficiently high (minimally a factor of 50X above the IDL in the original sample).
2. When the analytical spike recovery associated with the sample is below 40% after two successive dilutions by Graphite Furnace Atomic Absorption (GFAA).

M: This flag applies to GFAA analyses for concentrations greater than the Contract Required Detection Limit (CRDL). This flag is only used for GFAA if the analytical sample or analytical spike duplicate injection reading is not within 20% of the Relative Standard Deviation (RSD).

N: This flag indicates the sample spike recovery is outside of control limits:

*: This flag is used for duplicate analysis when the sample and the sample duplicate results are not within control limits.

S: This flag applies to GFAA analyses to indicate the reported value was determined by the Method Of Standard Addition (MSA).

W: This flag applies to GFAA analyses when the post-digestion spike (analytical spike) is out of control limits (85% - 115%), while sample absorbance is less than 50% of "spike" absorbance ["spike" is defined as (absorbance or concentration of spike sample) minus (absorbance or concentration of the sample)].

+: This flag applies to GFAA analyses when the correlation coefficient for the MSA is less than 0.995 after two MSA analyses.

NOTE: Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

The extensions: D, S, SD, L. A, added to the end of the client ID represent as follows:

D: matrix duplicate
S: matrix spike
SD: matrix spike duplicate
L: serial dilution
A: post digestion spike

Method Codes:

P: ICP PLASMA
CV: MERCURY COLD VAPOR AA
CA: *MIDI-DISTILLATION SPECTROPHOTOMETRIC*
F: FURNACE AA

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

JUN 0 8 2001

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: _____ SDG No.: ME0036

SOW No.: ILM04.1

EPA Sample No.	Lab Sample ID.
ME0036	ME0036-1
ME0036D	WG10512-2
ME0036S	WG10512-1
ME0037	ME0036-2
ME0038	ME0036-3
ME0039	ME0036-4

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: THE FOLLOWING ANALYTES HAVE BEEN FLAGGED WITH AN "E" TO INDICATE SERIAL DILUTION RESULTS WHICH ARE NOT WITHIN CONTROL LIMITS:

POTASSIUM

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Thomas R. Cole Name: Thomas R. Cole

Date: June 6, 2001 Title: Data Reviewer II

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

ME0036

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG No.: ME0036

Matrix (soil/water): SOIL Lab Sample ID: ME0036-1

Level (low/med): LOW Date Received: 05/25/01

% Solids: 59.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16600			P
7440-36-0	Antimony	0.85	B	N	P
7440-38-2	Arsenic	12.2		*	P
7440-39-3	Barium	190			P
7440-41-7	Beryllium	2.6			P
7440-43-9	Cadmium	2.3			P
7440-70-2	Calcium	60700			P
7440-47-3	Chromium	24.9		*	P
7440-48-4	Cobalt	3.3	B		P
7440-50-8	Copper	40.8			P
7439-89-6	Iron	73600			P
7439-92-1	Lead	110		*	P
7439-95-4	Magnesium	14200			P
7439-96-5	Manganese	3040		*	P
7439-97-6	Mercury	0.14	B		CV
7440-02-0	Nickel	17.9			P
7440-09-7	Potassium	1280	B	E	P
7782-49-2	Selenium	2.8		N	P
7440-22-4	Silver	0.24	U		P
7440-23-5	Sodium	422	B		P
7440-28-0	Thallium	10.1			P
7440-62-2	Vanadium	21.7			P
7440-66-6	Zinc	280			P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

ME0037

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG No.: ME0036

Matrix (soil/water): SOIL Lab Sample ID: ME0036-2

Level (low/med): LOW Date Received: 05/25/01

% Solids: 50.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7780			P
7440-36-0	Antimony	0.95	B	N	P
7440-38-2	Arsenic	13.4		*	P
7440-39-3	Barium	66.0	B		P
7440-41-7	Beryllium	0.66	B		P
7440-43-9	Cadmium	2.0			P
7440-70-2	Calcium	53900			P
7440-47-3	Chromium	39.1		*	P
7440-48-4	Cobalt	8.1	B		P
7440-50-8	Copper	53.0			P
7439-89-6	Iron	60300			P
7439-92-1	Lead	94.0		*	P
7439-95-4	Magnesium	22000			P
7439-96-5	Manganese	1250		*	P
7439-97-6	Mercury	0.094	U		CV
7440-02-0	Nickel	28.2			P
7440-09-7	Potassium	1650	B	E	P
7782-49-2	Selenium	1.2	B	N	P
7440-22-4	Silver	0.27	U		P
7440-23-5	Sodium	522	B		P
7440-28-0	Thallium	11.1			P
7440-62-2	Vanadium	28.2			P
7440-66-6	Zinc	264			P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

ME0038

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG No.: ME0036

Matrix (soil/water): SOIL Lab Sample ID: ME0036-3

Level (low/med): LOW Date Received: 05/25/01

% Solids: 64.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7200			P
7440-36-0	Antimony	0.58	B	N	P
7440-38-2	Arsenic	14.8		*	P
7440-39-3	Barium	61.7			P
7440-41-7	Beryllium	0.81	B		P
7440-43-9	Cadmium	2.1			P
7440-70-2	Calcium	52500			P
7440-47-3	Chromium	36.5		*	P
7440-48-4	Cobalt	8.2	B		P
7440-50-8	Copper	67.5			P
7439-89-6	Iron	65600			P
7439-92-1	Lead	110		*	P
7439-95-4	Magnesium	22200			P
7439-96-5	Manganese	1290		*	P
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel	27.4			P
7440-09-7	Potassium	1390	B	E	P
7782-49-2	Selenium	1.1	B	N	P
7440-22-4	Silver	0.21	U		P
7440-23-5	Sodium	254	B		P
7440-28-0	Thallium	10.2			P
7440-62-2	Vanadium	27.3			P
7440-66-6	Zinc	316			P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

ME0039

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG No.: ME0036

Matrix (soil/water): SOIL Lab Sample ID: ME0036-4

Level (low/med): LOW Date Received: 05/25/01

% Solids: 65.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7400			P
7440-36-0	Antimony	1.8	B	N	P
7440-38-2	Arsenic	78.7		*	P
7440-39-3	Barium	255			P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	2.1			P
7440-70-2	Calcium	52900			P
7440-47-3	Chromium	19.7		*	P
7440-48-4	Cobalt	8.8	B		P
7440-50-8	Copper	92.3			P
7439-89-6	Iron	31700			P
7439-92-1	Lead	184		*	P
7439-95-4	Magnesium	23200			P
7439-96-5	Manganese	587		*	P
7439-97-6	Mercury	1.2			CV
7440-02-0	Nickel	24.1			P
7440-09-7	Potassium	1800		E	P
7782-49-2	Selenium	1.4	B	N	P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	253	B		P
7440-28-0	Thallium	5.7			P
7440-62-2	Vanadium	19.8			P
7440-66-6	Zinc	413			P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

BLANKS

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	39.1	U	39.1	U	39.1	U	39.1	U	7.820	U	P
Antimony	1.6	U	1.6	U	1.6	U	1.6	U	0.320	U	P
Arsenic	2.1	U	2.1	U	2.1	U	2.1	U	-.777	B	P
Barium	0.1	U	0.2	B	0.2	B	0.2	B	0.060	B	P
Beryllium	0.4	U	0.4	U	0.4	U	0.4	U	0.080	U	P
Cadmium	0.3	U	0.4	B	0.3	U	0.3	U	-.077	B	P
Calcium	-56.1	B	-35.6	B	-38.8	B	-70.9	B	2.260	U	P
Chromium	0.7	U	0.7	U	0.7	U	0.7	U	0.140	U	P
Cobalt	0.3	U	0.3	U	0.5	B	0.4	B	0.060	U	P
Copper	0.9	U	0.9	U	0.9	U	0.9	U	0.236	B	P
Iron	12.4	U	12.4	U	12.4	U	12.4	U	6.283	B	P
Lead	-1.0	B	-1.3	B	0.9	U	0.9	U	0.270	B	P
Magnesium	9.8	U	30.6	B	24.2	B	9.8	U	6.556	B	P
Manganese	0.1	U	0.1	B	0.1	B	0.2	B	0.162	B	P
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.050	U	CV
Nickel	0.7	U	0.7	U	0.7	U	0.7	U	0.140	U	P
Potassium	28.9	U	28.9	U	28.9	U	28.9	U	7.429	B	P
Selenium	2.3	U	2.3	U	2.3	U	2.3	U	0.460	U	P
Silver	0.7	U	0.7	U	0.7	U	0.7	U	0.140	U	P
Sodium	165.9	U	165.9	U	200.4	B	165.9	U	236.206	B	P
Thallium	3.5	U	3.5	U	3.5	U	3.5	U	-.754	B	P
Vanadium	0.4	B	0.3	U	0.3	U	0.4	B	0.060	U	P
Zinc	-4.5	B	-4.8	B	-4.9	B	-5.4	B	0.200	U	P

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BLANKS

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: _____ SDG NO.: ME0036

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			39.1	U							P
Antimony			1.6	U							P
Arsenic			2.1	U							P
Barium			0.4	B							P
Beryllium			0.4	U							P
Cadmium			0.4	B							P
Calcium			11.3	U							P
Chromium			0.7	U							P
Cobalt			0.3	U							P
Copper			0.9	U							P
Iron			19.0	B							P
Lead			0.9	U							P
Magnesium			59.5	B							P
Manganese			0.3	B							P
Mercury			0.1	U							CV
Nickel			0.7	U							P
Potassium			28.9	U							P
Selenium			2.3	U							P
Silver			0.7	U							P
Sodium			165.9	U							P
Thallium			3.5	U							P
Vanadium			0.3	U							P
Zinc			-3.2	B							P

5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.: ME0036S

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: _____ SDG NO.: ME0036

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 59.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony	75 - 125	86.6931		0.8540	B	169.49	50.6	N	P
Arsenic	75 - 125	23.5319		12.2286		13.56	83.4		P
Barium	75 - 125	831.8777		190.4557		677.97	94.6		P
Beryllium	75 - 125	16.9708		2.5751		16.95	84.9		P
Cadmium	75 - 125	17.1326		2.2948		16.95	87.5		P
Chromium	75 - 125	84.1896		24.9009		67.80	87.4		P
Cobalt	75 - 125	154.8398		3.3473	B	169.49	89.4		P
Copper	75 - 125	125.0416		40.8315		84.75	99.4		P
Lead		110.8278		109.5754		6.78	18.5		P
Manganese		3385.5437		3035.9023		169.49	206.3		P
Mercury	75 - 125	1.0424		0.1420	B	0.85	105.9		CV
Nickel	75 - 125	167.9119		17.8868		169.49	88.5		P
Selenium	75 - 125	5.2603		2.7670		3.39	73.5	N	P
Silver	75 - 125	14.1582		0.2373	U	16.95	83.5		P
Thallium	75 - 125	23.8558		10.0815		16.95	81.3		P
Vanadium	75 - 125	176.0000		21.6623		169.49	91.1		P
Zinc	75 - 125	412.1353		280.2047		169.49	77.8		P

Comments: _____

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5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.: ME0036A

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added(SA)	%R	Q	M
Antimony		118.74		2.52	B	120.0	96.8		P
Selenium		22.37		8.16		16.0	88.8		P

Comments:

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DUPLICATES

EPA SAMPLE NO.

ME0036D

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 59.0 % Solids for Duplicate: 54.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		16625.3711		16568.8691		0.3		P
Antimony		0.8540	B	3.2477	B	116.7		P
Arsenic	3.4	12.2286		16.5666		30.1	*	P
Barium	67.8	190.4557		216.3131		12.7		P
Beryllium	1.7	2.5751		2.5498		1.0		P
Cadmium	1.7	2.2948		2.3011		0.3		P
Calcium		60730.6172		56780.8555		6.7		P
Chromium		24.9009		49.7814		66.6	*	P
Cobalt		3.3473	B	3.4179	B	2.1		P
Copper	8.5	40.8315		48.2921		16.7		P
Iron		73589.7344		79742.2734		8.0		P
Lead		109.5754		150.0473		31.2	*	P
Magnesium		14235.6055		12551.0586		12.6		P
Manganese		3035.9023		4471.1563		38.2	*	P
Mercury		0.1420	B	0.1343	B	5.6		CV
Nickel	13.6	17.8868		18.5263		3.5		P
Potassium		1275.8510	B	1340.5422	B	4.9		P
Selenium	1.7	2.7670		3.3443		18.9		P
Silver		0.2373	U	0.2373	U			P
Sodium		421.8943	B	402.3895	B	4.7		P
Thallium	3.4	10.0815		11.7265		15.1		P
Vanadium	16.9	21.6623		29.8155		31.7		P
Zinc		280.2047		274.4927		2.0		P

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

ME0036L

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	49044.84		45672.06		6.9		P
Antimony	2.52	B	8.00	U	100.0		P
Arsenic	36.07		39.83	B	10.4		P
Barium	561.84		555.51	B	1.1		P
Beryllium	7.60		6.17	B	18.8		P
Cadmium	6.77		6.36	B	6.1		P
Calcium	179155.30		180933.56		1.0		P
Chromium	73.46		77.40		5.4		P
Cobalt	9.87	B	9.82	B	0.5		P
Copper	120.45		114.82	B	4.7		P
Iron	217089.70		220698.94		1.7		P
Lead	323.25		324.33		0.3		P
Magnesium	41995.03		40708.12		3.1		P
Manganese	8955.91		9406.74		5.0		P
Nickel	52.77		54.19	B	2.7		P
Potassium	3763.76	B	3003.02	B	20.2	E	P
Selenium	8.16		11.50	U	100.0		P
Silver	0.70	U	3.50	U			P
Sodium	1244.59	B	1919.65	B	54.2		P
Thallium	29.74		50.63		70.2		P
Vanadium	63.90		64.68	B	1.2		P
Zinc	826.60		808.53		2.2		P

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

ICP ID Number: P3 Date: 04/16/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.22		200	39.1	P
Antimony	206.84		60	1.6	P
Arsenic	189.04		10	2.1	P
Barium	493.41		200	0.1	P
Beryllium	313.04		5	0.4	P
Cadmium	226.50		5	0.3	P
Calcium	317.93		5000	11.3	P
Chromium	267.72		10	0.7	P
Cobalt	228.62		50	0.3	P
Copper	324.70		25	0.9	P
Iron	271.44		100	12.4	P
Lead	220.35		3	0.9	P
Magnesium	279.08		5000	9.8	P
Manganese	257.61		15	0.1	P
Nickel	231.60		40	0.7	P
Potassium	766.49		5000	28.9	P
Selenium	196.03		5	2.3	P
Silver	328.07		10	0.7	P
Sodium	330.23		5000	165.9	P
Thallium	190.86		10	3.5	P
Vanadium	292.40		50	0.3	P
Zinc	213.86		20	1.0	P

Comments:

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

ICP ID Number: Date: 04/16/01

Flame AA ID Number: V2

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Mercury	253.70		0.2	0.1	CV

Comments:

PREPARATION LOG

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

Method: P

EPA Sample No.	Preparation Date	Weight (grams)	Volume (mL)
LCSS	06/04/01	1.00	200
ME0036	06/04/01	1.00	200
ME0036D	06/04/01	1.00	200
ME0036S	06/04/01	1.00	200
ME0037	06/04/01	1.03	200
ME0038	06/04/01	1.04	200
ME0039	06/04/01	1.06	200
PBS	06/04/01	1.00	200

PREPARATION LOG

Lab Name: COMPUCHEM Contract: 68W00082

Lab Code: LIBRTY Case No.: 29334 SAS No.: SDG NO.: ME0036

Method: CV

EPA Sample No.	Preparation Date	Weight (grams)	Volume (mL)
LCSS	06/04/01	0.20	100
ME0036	06/04/01	0.20	100
ME0036D	06/04/01	0.20	100
ME0036S	06/04/01	0.20	100
ME0037	06/04/01	0.21	100
ME0038	06/04/01	0.27	100
ME0039	06/04/01	0.26	100
PBS	06/04/01	0.20	100